

MOLLUSCA OF H.M.S. 'CHALLENGER' EXPEDITION.—Part XX.

By the Rev. ROBERT BOOG WATSON, B.A., F.R.S.E., F.L.S.

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Fam. BULLIDÆ (*continued*). Fam. APLYSIIDÆ.

The group belonging to these two families, so far as already overtaken, is a small one, comprising only three genera with five species. All the species, however, are of great beauty and interest.

Fam. BULLIDÆ, *Stol.*

1. Gen. ATYS.

2. Gen. SCAPHANDER.

ATYS, *Montf.*

ATYS HYALINA, n. sp.*

July 29, 1874. Levuka, Fiji. 12 fms.

St. 186. Sept. 8, 1874. Lat. 10° 30' S., long. 142° 18' E.
Wednesday Island, Cape York, N. Australia. 8 fms. Coral-sand.

St. 187. Sept. 9, 1874. Lat. 10° 36' S., long. 141° 55' E.
Near Cape York, N. Australia. 6 fms. Coral-sand.

Shell.—Oval, subgibbous, a little abruptly contracted and slightly constricted and truncated above, striated, thin, hyaline, umbilicated, with a largish curved mouth. *Sculpture*. Longitudinals—there are very many slight equal hair-like lines of growth. Spirals—with the exception of a narrow nearly median band, which is smooth, the whole surface is scratched with fine smooth regular square-cut widely parted furrows. These are rather more regularly arranged above than below, where the interstices are more wide and less regular; but toward the end of the shell in both directions the furrows tend to become crowded; they extend to the very edge of the funnel-shaped depression of the apex; but the depression itself is smooth except for the twisted edge of the outer lip, which is reverted as usual, but somewhat narrowly at the generic sinus: in front they score the umbilicus on one side, but do not quite extend to the edge of the pillar. *Colour* hyaline to translucent. *Mouth* long, curved, rather narrow, and not much enlarged in front. *Outer lip* convex,

* Not *Bulla hyalina*, Gm.

posteriorly produced; the generic twisted sinus is rather small; above it the lip rises and advances, and forms a sharp curve: from this point the lip runs out to the right, at first straight or faintly concave, and here a little contracted, but afterwards with a very regular curve, and increasingly patulous to the point of the shell. *Top* very obliquely truncate, with a bluntish edge and a small funnel-shaped depression, which, through the generic sinus, leads into the interior of the shell. *Inner lip*: there is no glaze on the body, the curve of which is a little gibbous above: the pillar-edge is narrow, reverted, bluntly toothed, twisted, and truncated in front; at the base of the pillar this edge is very much twisted, and is there separated from the body, leaving a very narrow but deep fissure communicating with the deep umbilicus which lies behind, and is partly covered by the expanded and projecting pillar-edge. H. 0·44. B. 0·24. Breadth of mouth at same place 0·07.

I do not know any *Atys* with which to compare this very beautiful and delicate species. It has something of the gibbosity of *Atys cylindrica*, Helb., var. *solida*, in its stumpiest forms; but the texture of the shell, the sculpture, and the umbilicus are very different. The specimens from St. 186 and 187 are quite young shells, but are, I have no doubt, this species. From Honolulu, 40 fms., there is a specimen of *Atys* probably belonging to this species, but in too bad condition for identification with any certainty.

GÉN. SCAPHANDER, *Mont.*

1. *S. mundus*, n. sp.
2. *S. niveus*, n. sp.

3. *S. gracilis*, n. sp.

1. SCAPHANDER MUNDUS, n. sp.

St. 191. Sept. 23, 1874. Lat. 5° 41' S., long. 134° 4' E. Off Arru Island, W. of Papua. 800 fms. Fine sand. Bottom temperature 39°·5.

Shell.—Obliquely oval, above narrowed obliquely, concavely truncated, and on the right bluntly pointed; below rounded, thin, opaque, ivory-white, glossy, stippled in spiral lines. *Sculpture*. Longitudinals—there are very fine hair-like lines of growth with slight irregular interrupted and unequal undulations. Spirals—the whole shell is covered with small shallow distant impressed dots: these above are roughly rounded or obliquely longitudinal;

but from about one third of the way down they become transversely elongate: they are arranged in rows not quite equal, and which are parted by intervals of fully double the breadth of the dotted rows: towards the point of the base the dots tend to return to the round shape, and the rows of largish dots are parted by rows of minute transversely elongated dots which occur in the intervals. Besides these, there are over the whole surface the close-set superficial microscopic spiral lines, which seem to be a characteristic of the genus. *Epidermis* excessively thin, membranaceous, and glossy, of a faint straw-colour. *Colour* ivory-white. *Crown* oblique. There is a slight indentation or small conical pit almost completely coated with the glaze of the lip: this little pit is encircled by a very slight and blunt keel. *Mouth* irregularly pear-shaped, being somewhat narrowed above and expanded below. *Outer lip* projects a little angularly behind, and here it is reverted, thickened, and appressed: from the highest point of its rise it sweeps round to the point of the pillar with a very equable curve; it is very patulous on the base. *Inner lip* flexuous, being very convex on the body and openly concave on the pillar. A very thin glaze extends from the outer lip above across the body to the pillar, which has a pretty strongly reverted rounded and twisted edge, up which one can just see into the interior of the shell for nearly two turns. H. 1.15. B. 0.78. Greatest breadth of mouth 0.61.

This is a delicately beautiful shell, curiously intermediate between *S. lignarius*, L., and *S. punctostriatus*, Migh., while perfectly distinct from both. In form it is less like a *Bulla* than the latter, while the attenuation above is less, and the expansion of the outer lip below is even greater than in the former. Lying on its face, it is broader and is more flattened, and that, too, more obliquely than either. Its puncto-striate spiral sculpture approaches that of *S. punctostriatus*, Migh.

2. SCAPHANDER NIVEUS, n. sp.

St. 214. Feb. 10, 1875. Lat. $4^{\circ} 33' N.$, long. $127^{\circ} 6' E.$ S.E. of the Philippines. 500 fms. *Globigerina*-ooze. Bottom temperature $41^{\circ} 8.$

Shell.—Thinnish, obliquely oval, slightly narrowed and rounded above, where the outer lip rises on the right like a tooth; in front it is rounded with a very blunt angulation at the point of the pillar; ivory-white, glossy, striate, but scarcely stippled.

The body is rather tumid, and shaped like a *Bulla*. *Sculpture*. Longitudinals—there are exceedingly faint hair-like lines of growth, of which, at frequent intervals, one more distinct produces a slight undulation of the surface. Spirals—the whole shell presents the microscopic and very superficial crimpings of the genus, which become rather strong on the base; there are also some very superficial and extremely obsolete bandings or furrows and ridges, which are scarcely appreciable. Besides these, the upper half of the shell and the point of the base are scratched with fine square-cut striæ, which, with a little difficulty, can be recognized as formed of minute contiguous stippings: these are very remote in the middle of the shell, but towards either extremity they become crowded. *Epidermis* membranaceous. *Colour* white with a faint ivory tinge. *Crown* consists only in the flatly rounded margin of a very small pit-like depression in front of the origin of the outer lip, which rises abruptly above the top of the shell. *Mouth* curved, rather club- than pear-shaped, being gibbously enlarged in front and elongate and rather narrow behind. *Outer lip* thickened, reflected, and sinuated above, where, curving forwards, it rises in a tooth-like form above the crown; from this point it sweeps very equably round to the point of the pillar, the curve being very slightly flattened above, and somewhat full on the base: it is patulous throughout: the very thin edge is nowhere very prominent. *Inner lip* roundly convex on the body, bluntly angulated at the base of the short scarcely curved and barely truncate pillar. A thickish and rather prominent glaze joins the two extremities of the outer lip: near its edge on the upper part of the body this glaze has a few irregular rounded tubercles: on the base, where it is thickened to a pad, these tubercles increase in size and number, while the reverted pillar-lip is harshly covered with them. The pillar-lip is not quite closely appressed, having an overhanging edge and a closed chink behind it. H. 1.15. B. 0.8. Greatest breadth of mouth 0.56.

Having only one specimen of this species under examination, it is impossible to say whether the roughening of the labial glaze is a specific feature, as in some of the *Volutes*, or the result of disease. In this species the general form of the shell, and especially that of the body-whorl, is even liker a *Bulla* than is the case with *S. punctostriatus*, Migh.; but the apex is not perforated. As in that species one, looking up the pillar, can only see a single complete whorl. The minute stipling of the spirals

resembles, on a still smaller scale, that feature in *S. lignarius*, L. Compared to *S. mundus*, Wats., this is a much more tumid form, and the sculpture is markedly different.

3. SCAPHANDER GRACILIS, n. sp.

St. 73. June 30, 1873. Lat. 38° 30' N., long. 31° 14' W. West of Azores. 1000 fms. *Globigerina*-ooze. Bottom temperature 39°·4.

St. 78. July 10, 1873. Lat. 37° 26' N., long. 25° 13' W. Off San Miguel, Azores. 1000 fms. *Globigerina*-ooze.

Shell.—Thinnish, oblong, slightly flattened, a little narrowed upward, obliquely truncate at the top, where the outer lip rises like a tooth on the right; in front it is a little oblique toward the right, very little expanded, rounded towards the point. The mouth is pear-shaped and small for the genus. *Sculpture*. Longitudinals—the lines of growth are very slight. Spirals—the whole surface is dotted over with fine remote stippings somewhat variable in size and shape, running in rather oblique spiral lines, which are a little crowded above and distant in front, where, however, an additional finer line of minute stippings is often intercalated. *Epidermis* membranaceous, pale lemon-yellow. *Colour* dead white, with occasional translucent longitudinal bands. *Crown* consists of the bluntly rounded edge of a small shallow round pit, which is partly or wholly choked up with the labial callus: the line across the crown is very oblique. *Mouth* rather small, pear-shaped, and nearly straight. *Outer lip* slightly thickened and reflected on the crown of the shell, from which it rises upwards and projects forwards like a tooth: from this point it advances almost straight with a patulous and scarcely convex edge to the beginning of the base, whence it sweeps round, retreating and very patulous, to the point of the pillar. *Inner lip* very slightly convex above, almost straight in its oblique course across the base; on all this part a thickish well-defined glaze is spread: on the front of the body, as the mouth begins to widen, this glaze is pressed out into a blunt angulation, almost a tooth, which is prolonged to the left in the narrow-edged, flat-fronted, truncated, twisted, concave pillar: here the reverted callus, which dies out at the point of the pillar, has behind it a small shallow flat furrow leading up into a pore-shaped umbilicus. Looking up the axis of the shell, though the opening is rather narrow, two whorls can be distinguished. H. 0·62. B. 0·34. Greatest breadth of mouth 0·24.

This is a long and narrow shell with little of the generic peculiarity of shape, though the anterior splay form is recognizable. The singular thickening of the pillar seems to increase with age. In the three specimens from St. 78 it is much more strongly marked than in the somewhat younger shells from St. 73. The young shells of *S. punctostriatus*, Mighels, are squatter, rounder, with a flatter crown, and have the outer lip less produced behind; their stippled sculpture, which varies a good deal, is often coarser, and forms more continuous spirals; the pillar-lip, too, and shape of the body are very different. In one of the St. 78 specimens in particular the slow wasting away of the surface has scarcely attacked the stippled pits of the spirals, which accordingly remain projecting as flat round tubercles.

Fam. APLYSIIDÆ, *d'Orb.*

Gen. DOLABRIFERA, *Gray.*

DOLABRIFERA TRIANGULARIS, n. sp.

Oct. 29 to Dec. 16, 1873. Simon's Bay, Cape of Good Hope. 10-20 fms.

Shell.—Much arched, corrugated, porcellaneous, dull, and scored on the upper surface with sharp strong lines of growth, on the under surface lustrous and amorphous, with a strong but irregular oblique longitudinal furrow and rough radiating lines toward the back; it resembles the blade of a fleam, being triangular, with a straight back, the handle (where the nucleus is) in front, and the point (a bluntly rounded one) on the left. Round the nucleus there is an amorphous expansion and thickening; across the blade obscure and unequal rays diverge from a point behind the nucleus. The back of the blade is thick and blunt, the other two sides bluntly bevelled to a sharp edge. H. 0·43. B. 0·21. Height of the arch 0·1. Greatest breadth behind 0·3.

This species is much more attenuated in front than *D. marmorea*, Pease, from the Sandwich Islands, which otherwise it much resembles in form and texture, whilst it is in sculpture much more delicate. *D. Maillardi*, Desh., from the island of Bourbon (see 'Moll. de Bourbon,' p. 53, vii. 20-22), is much more regular in shape, more like the seed of our common plane (*Acer pseudo-platanus*), with a regular-shaped wing and a head or nucleus continuous with the body instead of, as here, a fleam-like blade and distinct handle.
